

INTRODUCTION TO HEALTH SCIENCE

CIP Code: Health Science, Introduction 51.0001
Units of Credit: 0.5
Levels: 9-12
Skill Certificate: Introduction to Health Science Available

Introduction to Health Science Description: This semester course is designed to create an awareness of career possibilities in health care and inform students of the educational options available for health science and health technology programs. Instruction includes beginning anatomy and physiology, medical terminology, medical ethics, diseases, and disorders. The course prepares students for the Medical Anatomy/Physiology course and/or for a variety of health technology programs.

Standards and Objectives

01 INTRODUCTION

Students will explore the fundamental aspects of Health Sciences.

- 01.01 Compare and contrast the history of medicine with current trends.
- 01.02 Illustrate the characteristics of a proficient healthcare consumer.
- 01.03 Summarize basic professional standards of healthcare workers as they apply to hygiene, dress, language, confidentiality and behavior (i.e. courtesy and self-introductions).
- 01.04 Classify the personal traits and attitudes desirable in a member of the healthcare team including respect and objectivity when dealing with diverse patients.
- 01.05 Investigate different healthcare facilities and healthcare delivery systems in regards to socioeconomic status (insured, underinsured, and uninsured).
- 01.06 Compare potential health science career pathways using a variety of health careers within the diagnostic/therapeutic services, health informatics, support services, and biotechnology research and development fields.
- 01.07 Demonstrate knowledge of the foundations of medical law, patient rights and responsibilities, and medical ethics.
- 01.08 Investigate the importance of medical math and demonstrate real-world connections between medical math and the medical field.
- 01.09 Apply relevant medical terminology to a simulated professional setting.

Medical Terminology and Abbreviations students should know:	Medical Terminology: health care systems, insurance, diversity, culture, law, ethics, tort, Patient's Bill of Rights, Career Pathway, professionalism, empathy, emergency situations and care, family health history, technology and medicine, informed consent Medical Abbreviations: HMO, PPO, HIPAA, HIV, AIDS
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02 SUPPORT SYSTEMS

Students will explore aspects of the body systems related to support.

SKELETAL SYSTEM

- 02.01 Describe the basic functions of the skeletal system: hematopoiesis (blood cell production), structure, support, muscle attachment and movement, mineral storage.
- 02.02 Identify basic bones of the skeleton: cranium (frontal, parietal, occipital, temporal, maxillae, mandible), vertebrae (cervical, thoracic, lumbar, sacrum, coccyx), sternum, xiphoid process, ribs, humerus, radius, ulna, carpals, metacarpals, phalanges, pelvis (ilium, ischium, pubis), femur, patella, tibia, fibula, tarsals, metatarsals, and phalanges.
- 02.03 Describe joint movement: hinge, gliding, and ball and socket.
- 02.04 Describe the diseases and disorders of the skeletal system: fractures, scoliosis, and osteoarthritis.
- 02.05 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the skeletal system: radiologist, radiology technician, chiropractor, physical therapist, physical therapy assistant, and physical therapy aide.

MUSCULAR SYSTEM

- 02.06 Describe the basic functions of the muscular system: heat production, movement, structure, and protection.
- 02.07 Describe the locations and functions of the following skeletal muscles: biceps brachii, triceps brachii, trapezius, deltoid, diaphragm, pectoralis major, latissimus dorsi, rectus abdominus, gastrocnemius, hamstrings, quadriceps, and gluteus maximus.
- 02.08 Differentiate between cardiac (striated, involuntary, intercalated discs, found in the heart), smooth (no striations, involuntary, found in hollow organs like the stomach), and skeletal muscles (striated, voluntary, found along the bones).
- 02.09 Compare and contrast the diseases and disorders of the muscular system: tendonitis, sprain, and strain.
- 02.10 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the muscular system: orthopedic surgeon, certified athletic trainer, medical illustrator, and massage therapist.

INTEGUMENTARY SYSTEM

- 02.11 Describe the basic functions of the integumentary system: protection against infection, vitamin D production, sensory organ, temperature regulation, and protection against UV light.
- 02.12 Identify the layers of the skin (epidermis, dermis, subcutaneous layer) and appendages (nails, sweat (sudoriferous) glands, oil (sebaceous) glands, and hair).
- 02.13 Describe the diseases and disorders of the integumentary system: acne, fungus infections (athletes foot, ringworm, and jock itch), and skin cancer.
- 02.14 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the integumentary system: dermatologist, medical photographer, physician assistant, and plastic surgeon.

Medical Terminology and Abbreviations students should know:	Medical Terminology: thoracic, cranium, vertebrae, extremities, x-ray, hematopoiesis, myocardium, striations, thermogenesis, avascular, epidermis, dermis, subcutaneous, sudoriferous, sebaceous Medical Abbreviations: PA, PT, Fx, CT, MRI
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03 TRANSPORTATION SYSTEMS

Students will explore aspects of the body systems related to transportation.

RESPIRATORY SYSTEM

- 03.01 Describe the basic functions of the respiratory system: warm, moisten and filter air, sound production, and carbon dioxide-oxygen gas exchange.
- 03.02 Identify basic structures of the respiratory system: nose, nasal cavity, pharynx, epiglottis, larynx, trachea, bronchi, bronchioles, lungs, and alveoli.
- 03.03 Describe the diseases and disorders of the respiratory system: common cold, pneumonia, lung cancer, asthma, bronchitis, tuberculosis, and influenza.
- 03.04 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the respiratory system: pulmonologist, respiratory therapist, and certified respiratory technician.

CIRCULATORY SYSTEM

- 03.05 Describe the basic functions of the circulatory system: transportation of nutrients and wastes, transportation of heat, transportation of oxygen and carbon dioxide, transportation of hormones, and transportation of antibodies.
- 03.06 Identify basic structures of the circulatory system: heart, blood vessels (arteries, capillaries, veins), and blood.
- 03.07 Describe the diseases and disorders of the circulatory system: anemia, heart attack, high blood pressure, and atherosclerosis.
- 03.08 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the circulatory system: emergency medical technician (EMT)/paramedic, surgical technician, cardiologist, phlebotomist, and cardiovascular technician.

IMMUNE SYSTEM

- 03.09 Describe the basic functions of the immune system: to provide immunity.
- 03.10 Identify basic structures of the immune system: tonsils and lymph nodes.
- 03.11 Describe the diseases and disorders of the immune system: human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS), lupus, and mononucleosis.
- 03.12 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the immune system: microbiologist, epidemiologist, and medical ethicist.

Medical Terminology and Abbreviations students should know:	Medical Terminology: artificial respiration, aspiration, epistaxis, hyperventilation, stridor, arrhythmia, circulation, murmur, palpitation, varicose veins, antibody, antigen, immunity, lymphocyte, pathogen Medical Abbreviations: EKG/ECG, CPR, COPD, TLC, CBC
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04 REGULATORY SYSTEMS

Students will explore aspects of the body systems related to regulation.

NERVOUS SYSTEM

- 04.01 Describe the basic functions of the nervous system: sensation, coordination, and movement.
- 04.02 Identify basic structures of the nervous system: brain, spinal cord, cerebrospinal fluid, meninges, and nerves.
- 04.03 Identify the following brain structures and their functions: cerebrum, cerebellum, and brain stem.
- 04.04 Describe the diseases and disorders of the nervous system: meningitis, epilepsy, traumatic brain injury, headache, and stroke.
- 04.05 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the nervous system: occupational therapist, occupational therapist assistant, toxicologist, pharmacist, pharmacy technician, social worker, and psychologist.

SPECIAL SENSES

- 04.06 Describe the special senses: smell, taste, hearing, vision, and touch.
- 04.07 Identify basic structures of the special sense organs: ear (outer ear, auditory canal, tympanic membrane, middle ear, inner ear, and auditory tube), eye (eyelid, conjunctiva, sclera, cornea, iris, pupil, lens, and retina), nose (olfactory receptor and nerve), mouth/tongue (taste buds), and skin (nerve endings).
- 04.08 Describe the diseases and disorders of the special senses: conjunctivitis, otitis media, tinnitus, vertigo, myopia, and hyperopia.
- 04.09 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the special senses: speech language pathologist, audiologist, and optometrist.

ENDOCRINE SYSTEM

- 04.10 Describe the basic functions of the endocrine system: regulate growth, development, and maturation.
- 04.11 Identify the locations, secretions (hormones), and functions of the following glands: pituitary (growth hormone (GH), adrenocorticotrophic hormone (ACTH), thyroid-stimulating hormone (TSH), and oxytocin), thyroid (thyroxine), pancreas (islet cells of Langerhans—insulin and glucagon), and adrenal glands (cortisol, adrenaline, and noradrenaline).
- 04.12 Describe the diseases and disorders of the endocrine system: type I diabetes mellitus, type II diabetes mellitus, gestational diabetes mellitus, hypothyroidism, and hyperthyroidism.
- 04.13 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the endocrine system: clinical trials research coordinator, medical researcher, health educator, certified nurse assistant (CNA), licensed practical nurse (LPN), and registered nurse (RN).

Medical Terminology and Abbreviations students should know:	Medical Terminology: endocrine, hormones, reflexes, cerebrum, cerebellum, brain stem, pituitary gland, thyroid gland, pancreas, adrenal gland, diabetes mellitus, neurons, hearing, vision, taste Medical Abbreviations: GH, TSH, ACTH, CNS, CSF
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05 MAINTENANCE SYSTEMS

Students will explore aspects of the body systems related to maintenance.

DIGESTIVE SYSTEM

- 05.01 Describe the basic functions of the digestive system: ingestion, digestion, absorption, and excretion.
- 05.02 Describe the basic functions of the digestive organs (mouth, pharynx, esophagus, stomach, small intestines, large intestines, rectum, and anus) and their role in digestion.
- 05.03 Describe the diseases and disorders of the digestive system: colon cancer, Crohn's disease, celiac disease, appendicitis, and inguinal hernia.
- 05.04 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the digestive system: dentist, dental assistant, dental hygienist, dietitian, and central services technician.

URINARY SYSTEM

- 05.05 Describe the basic functions of the urinary system: maintain the volume and composition of body fluids and clear the body of wastes.
- 05.06 Identify the basic organs of the urinary system: kidneys, ureters, bladder, and urethra.
- 05.07 Compare and contrast the diseases and disorders of the urinary system: kidney stone, kidney failure, and cystitis.
- 05.08 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the urinary system: urologist, dialysis technician, medical lab technician, and medical assistant.

Medical Terminology and Abbreviations students should know:	Medical Terminology: ingestion, digestion, absorption, excretion, maceration, pharynx, esophagus, duodenum, jejunum, ileum, dialysis, dysuria, lithotripsy, benign, metastasis Medical Abbreviations: GI, MA, IV, Tx, Dx
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06 REPRODUCTIVE SYSTEM

Students will explore aspects of the human reproductive systems.

- 06.01 Describe the functions of the reproductive system: production of gametes (egg and sperm) by the gonads and to produce hormones to help in the maturation process.
- 06.02 Describe the structures of the female reproductive system (ovaries, uterine tubes, uterus, and vagina) and their functions.
- 06.03 Describe the structures of the male reproductive system (testes, scrotum, epididymis, vas deferens, prostate gland, and urethra) and their functions.
- 06.04 Describe the disease and disorders of the reproductive system: premenstrual syndrome (PMS), endometriosis, breast cancer, benign prostatic hypertrophy, testicular cancer, and sexually transmitted infections (STI/STD).
- 06.05 Recognize levels of education, credentialing requirements, employment opportunities, workplace environments, and career growth potential for the following careers relating to the reproductive system: geneticist, obstetrician/gynecologist (OB/GYN), mammographer, proctologist, and certified nurse midwife.

Medical Terminology and Abbreviations students should know:	Medical Terminology: amenorrhea, andrology, colporrhaphy, ectopic, embryo, fertilization, fetus, gametes, gonads, gynecology, implantation, ovum, puberty, spermatozoa, testosterone Medical Abbreviations: F, M, STI/STD, NB, SIDS
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